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Public Reporting of Hospital-Acquired Infections Is Not Associated with Improved Processes or Outcomes

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Abstract

Most US states have enacted or are considering legislation mandating hospitals to publicly report hospital-acquired infection (HAI) rates. We conducted a survey of infection control professionals and found that state-legislated public reporting of HAIs is not associated with perceived improvements in infection prevention program process measures or HAI rates.

Most US states have enacted or are considering legislation requiring hospitals to publicly report rates of hospital-acquired infections (HAIs).¹ Advocates contend that public reporting will decrease HAI rates and inform consumer choices.² Conversely, public reporting could divert resources toward collecting data and away from interventions to prevent infections and could create a disincentive for hospitals to care for patients at higher risk for HAIs.² We surveyed infection control professionals to evaluate the association between state-mandated public reporting of HAIs and their perceptions of infection control process and outcome measures at their hospitals.

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METHODS

We employed a cross-sectional study design. The survey (available as an online appendix or at http://www.shea-online.org/Portals/0/PDFs/Survey_Questions_FINAL_posted_1.pdf) was sent to the 137 infection professionals, representing US hospitals in 35 states, in the Society for Healthcare Epidemiology of America Research Network (SHEA-RN).³

The exposure of interest was whether or not the respondent's hospital is in a state with state-legislated mandatory reporting of 1 or more infections (federal hospitals were excluded). While Medicare's Hospital Compare website reports some HAI data for states nationally, these data are reported voluntarily by hospitals or are available because of state mandates. We focused on the state legislation date, occurring close to 2008 for most intervention hospitals in our study, as the point at which hospitals knew that the requirement was coming and were most likely to start responding. To capture post-intervention changes, some questions in our 2011 survey asked whether certain processes or outcomes had changed in the "past three years."

Mandatory reporting status was determined from publicly available information found in summaries and links to primary sources (ie, states' public health websites, legislation) from the Centers for Disease Control and Prevention (CDC),⁴ and nongovernmental organizations.⁵ States that legislated reporting of any infection often had plans to increase the number of reported infections, so we defined state reporting status as yes/no rather than attempting to evaluate the effect of required reporting of specific infections, which may be in flux.

We studied whether public reporting has resulted in a perception of greater proportion of infection control time being spent on HAI surveillance; less willingness to accept patients in transfer with an elevated risk of subsequent HAI; an increase in infection control resources; and changes in HAI rates. We created a web-based, anonymous survey that was e-mailed to all 137 SHEA-RN primary investigators from US institutions and solicited responses from May 3 through June 17, 2011. We asked that they or a designee complete the survey (a small number of responding sites have more than 1 investigator). When possible, questions were adapted from prior surveys⁶ and from the annual survey from the American Hospital Association.

χ^2 and Student *t* tests were used to determine statistical significance. The unit of analysis was the hospital. Analyses were conducted in SAS, version 9.3.

RESULTS

Responses were received from 110 out of the 137 eligible hospitals (80.3%), representing 31 states. Of the 110 respondents' hospitals, 91 (82.7%), in 22 states, were classified as having a reporting requirement (including explicitly for central line-associated bloodstream infections in 21, ventilator-associated pneumonia in 9, *Clostridium difficile* infections in 4, and catheter-associated urinary tract infections in 3). The majority of respondents overall were from hospitals that are nonprofit (83.5%), had 300 or more beds (61.5%), and are teaching hospitals (73.6%).

No study outcomes (or baseline demographics) were associated with reporting requirements. With regard to overall study outcome trends, the risk of subsequent HAI was thought to be used in the decision to accept patients in transfer “never” in 76.9% of hospitals, “rarely” in 8.8%, “sometimes” in 2.2% (12.1% of respondents “don’t know”). A majority of respondents felt that the infection control time spent on hand hygiene and isolation programs and on interventions to control HAIs was “too little” and that the time spent on surveillance and other listed activities was “about right” (Table 1). A majority of respondents also felt that there had not been an increase in infection control resources in the past 3 years (Table 2). Over the past 3 years, the mean perceived overall risk was “slightly decreased” for device-associated urinary tract infections, bloodstream infections, and pneumonias and “about the same” for *C. difficile*-associated disease.

DISCUSSION

Our survey of infection control professionals found that those in hospitals in states legislating mandatory public reporting did not perceive that there were improved process measures or lower infection rates, as compared to the perceptions of those in hospitals without these requirements. Additional findings from the survey included a perceived lack of resources for infection control, which may in turn have contributed to the belief that too little time is spent on interventions to decrease HAIs. In addition, some felt that a patient’s risk of subsequent HAI contributed to their hospital’s decision as to whether to accept that patient in transfer.

Our findings are consistent with a preliminary investigation by the CDC, which found that public reporting did not decrease hospital HAIs.⁷ There are multiple potential explanations for why public reporting may not lead to improvements, including a national decrease in HAIs,⁸ delayed actual public reports after legislation, a lack of public awareness and ability to interpret reports, and skepticism by infection control professionals that reports are valid and reliable.^{9,10}

A minority of respondents indicated that their hospital might use patients’ risk of subsequent HAI as a factor in deciding whether to accept them in transfer from other institutions. A reluctance to embrace the sickest patients is both unsurprising and worrisome. Mandated reporting of cardiac surgery mortality rates has led to reluctance by some surgeons to operate on the sickest patients.⁶

Our study has several potential limitations. First, our study sample included mainly large, academic hospitals with infection control professionals who have an interest in contributing to research, which may represent a group that is vigorously combating HAIs regardless of reporting. Our results may not be generalizable to hospitals without these characteristics. Second, our use of a survey may have led to inaccurate responses because of respondents giving socially desirable answers. However, we maintained strict anonymity to encourage unvarnished responses, and our outcome results are consistent with those based on the CDC’s evaluation. Since we did not ask for center identity, we cannot rule out multiple responses from the small number of centers with multiple SHEA-RN investigators. Third, information bias could occur if use of legislation date as the intervention time point is

incorrect for some states (3 years ago) or not the point at which the intervention has its effect. Fourth, confounding by unmeasured variables, including the multiple non-reporting influences on HAI rates, could have occurred. In addition, our sample size did not allow for multivariable modeling, although no demographic characteristics were associated with public reporting.

In conclusion, our study did not find that state-legislated public reporting was associated with perceived improvements in process measures or HAI rates.

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TABLE 1

Whether Time for Infection Control Has Been Too Little, About Right, or Too Much in the Past 12 Months

Infection control activity	No. (%) of responding hospitals			P value
	Total (n = 110)	No required reporting (n = 19)	Any required reporting (n = 91)	
Hand hygiene and isolation programs				.47
Too little	72 (65.5)	12 (63.2)	60 (65.9)	
About right	36 (32.7)	6 (31.6)	30 (33.0)	
Too much	2 (1.8)	1 (5.3)	1 (1.1)	
Influenza/pandemic programs				.76
Too little	24 (21.8)	4 (21.1)	20 (22.0)	
About right	83 (75.4)	14 (73.7)	69 (75.8)	
Too much	3 (2.7)	1 (5.3)	2 (2.2)	
Surveillance for HAIs				.68
Too little	34 (30.9)	7 (36.8)	27 (29.7)	
About right	62 (56.4)	9 (47.4)	53 (58.2)	
Too much	14 (12.7)	3 (15.8)	11 (12.1)	
Interventions to control HAIs				.50
Too little	80 (72.7)	15 (79.0)	65 (71.4)	
About right	30 (27.3)	4 (21.0)	26 (28.6)	
Too much	0 (0)	0 (0)	0 (0.0)	
Occupational health issues				.21
Too little	32 (29.1)	5 (26.3)	27 (29.7)	
About right	74 (67.3)	12 (63.2)	62 (68.1)	
Too much	4 (3.6)	2 (10.5)	2 (2.2)	

NOTE.

HAI, hospital-acquired infection.

TABLE 2

Perceived Changes in Infection Control Program Resources

Resource increase in past 3 years?	No. (%) of responding hospitals			P value
	Total (n = 110)	No required reporting (n = 19)	Any required reporting (n = 91)	
Physician hospital epidemiologist effort				.21
Yes	23 (20.9)	6 (31.6)	17 (18.7)	
No	87 (79.1)	13 (68.4)	74 (81.3)	
Nurse infection preventionist effort				.96
Yes	40 (36.4)	7 (36.8)	33 (36.3)	
No	70 (63.6)	12 (62.2)	58 (63.7)	
Other effort, either full or part-time ^a				.56
Yes	29 (26.4)	4 (21.1)	25 (27.5)	
No	81 (73.6)	15 (79.0)	66 (72.5)	
Funding (other than for personnel)				.13
Yes	23 (20.9)	7 (36.8)	16 (17.6)	
No	83 (75.5)	12 (63.2)	71 (78.0)	
Don't know	4 (3.6)	0 (0)	4 (4.4)	

^a For example, administrative assistant or data analyst.